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AUTHOR Kuhnsman, Liane M.
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ABSTRACT

The study investigated: (1) whether the mothers of young stuttering children differ from the mothers of young normally disfluent children in their verbal interaction patterns during free play with their children; and (2) whether disfluency in young children is related systematically to the type of speech act expressed. Four preschoolers and their mothers participated in the study. Forty-five minute conversational speech samples which were audio- and video-recorded were analyzed. Results indicated that the speech act categories used most frequently by the two groups of mothers did not vary in percentage of occurrence. The mothers did differ, however, in the number of utterances they produced when compared to the number of utterances produced by their children. The mothers of stuttering children talked more frequently. There was also a trend for the normally disfluent children to produce more disfluencies on statements while the young stuttering children were more disfluent on descriptions. Both groups of children exhibited more whole- and part-word repetitions than any other types of disfluency. (Author/DB)

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PRESCHOOLERS' DISFLUENCY: IS IT RELATED TO THE INTENDED MESSAGE?

LIANE M. KUHNSMAN, NORTHWESTERN UNIVERSITY
PRESENTED AT THE ASHA CONVENTION, NEW ORLEANS 1988

ABSTRACT: Parental verbal and nonverbal responses are often cited as contributing factors in the development of stuttering in young children. Parents are counseled, for example, to reduce the number of questions they ask their stuttering children despite the lack of evidence indicating that they ask their children too many questions. One purpose of the present study was to examine whether the mothers of young stuttering children differ from the mothers of young normally disfluent children in their verbal interaction patterns during free play with their children. A second purpose of the study was to investigate whether disfluency in young children is related systematically to the type of speech act expressed. Four preschoolers and their mothers participated in the study. Forty-five minute conversational speech samples which were audio- and video- recorded were analyzed. Results indicated that the speech act categories used most frequently by the two groups of mothers did not vary in percentage of occurrence. The mothers did differ, however, in the number of utterances they produced when compared to the number of utterances produced by their children. The mothers of the stuttering children talked more frequently. With regard to the patterns of disfluency displayed by the children, there was a trend for the normally disfluent children to produce more disfluencies on statements while the young stuttering children were more disfluent on descriptions. Both groups of children exhibited more whole- and part- word repetitions than any other types of disfluency.

RESEARCH QUESTIONS

1) Do the intentions expressed most typically by the mothers of nonstuttering children during play differ from those expressed most typically by the mothers of beginning stuttering children during play?

2) Is the frequency of disfluency in young nonstuttering children's speech related to the type of intention expressed in messages?

3) Is the frequency of disfluency in young beginning stuttering children related to the types of intentions expressed in messages?

4) Do nonstuttering children and nonstuttering children differ with regard to the nature of the relation between intentions in messages and the frequency of disfluency in speech?

METHODOLOGY

Subjects

The subjects in this study were four sets of mothers and their preschool children. Each of these children was referred to the experimenter at the Northwestern University Speech and Language Clinic because either or both of the parents were concerned about their child's disfluency. The experimenter evaluated the disfluency of each of the children over several sessions. Results of the evaluation suggested that two of the children were incipient stutterers and two were normally disfluent speakers. Therefore, at the time of the session reported in this paper, all of the mothers believed their children to be beginning stutterers. All subjects came from Caucasian, monolingual, middle-class home. They were all free of physical and sensory abnormalities. See **TABLE 1** for subject testing information.

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Data Collection Procedures

Data collection took place in the homes of the subjects. The mothers were instructed to play with their child using toys provided by the examiner. Each parent-child interaction was videotaped for 45-minutes. The interaction was recorded with a Panasonic color video camera and a Quasar videorecorder and tuner both of which were in view of the mother and child. A time generator on the camera was used to record actual times of occurring events in the sample for later analysis. In addition to the videorecording, an audiotape recording was collected using a Sony stereo cassette recorder. This recording was made to insure clarity of the audio portion of the interaction.

Coding Rules and Procedures (abridged)

Initially, the videotaped/audiotaped samples were transcribed into orthographic records. General activities and other nonverbal information relevant to the situation were noted. After this, these transcripts were transferred to coding sheets where seven types of analyses were completed. Disfluency measures were derived first. Then the number of conversational turns and utterances was tallied. Next, all utterances of the mother and the child were coded for the various intentions expressed. Fourth, the total number of tokens of each intention expressed was tallied for the parent and for the child. Then the total number of disfluencies per speech act was derived. The mean length of utterance for the three speech acts where that greatest percentages of disfluencies occurred was calculated next. Finally, the types of disfluencies noted most often per speech act were recorded.

Conversations were separated into conversational turns and all turns into utterances. Utterances were bound together by a pause, a rise or a fall in intonation contour, or grammatical completion. Sometimes, two utterances were bound together in one breath. Here the coder listened to intonational cues and decided whether or not the speaker intended the utterance to be one continuous or two separate utterances (Golinkoff & Ames, 1979). **TABLE 2** provides examples of coded utterances. Conversations were displayed on a written page. The person who was talking, the interaction number, and the exact interaction were identified on the written transcript.

Throughout the conversational context, a "narrative" or glossing was supplied (Miller, 1979). This was used for combining the context and utterance in order to specify the meaning and structure of each utteracne so that someone reading the transcript would beable to understand what was going on without returning to the original tape or relying entirely on the verbal context.

When an utterance or part of an utterance was unintelligible, a series of "x" marks indicating the general length of the unintelligible word or words was supplied. That meant that an unintelliglble utterance was heard and was excluded typically from the coded corpus. Double brackets ([[ ]]) indicated that two utterances or parts of the utterances were said simultaneously. Such an overlap was considered an interruption.

Analysis of the Data

The following analyses were completed for each parent-child dyad:

1. Frequency of stuttering and normally disfluent speech behaviors.
2. Total number of turns.
3. Total number of utterances.
4. Frequency of the ten different speech act (intention) categories. See **APPENDIX C** for the list of speech acts and their definitions).
5. Total number of disfluencies per speech act (intention) category.
6. Mean length of utterance in syllables for the three speech acts containing the greatest percentages of disfluency.
7. Frequency of the different types of disfluencies per speech act type.

RESULTS

A total of 3034 utterances were coded and evaluated from the conversation of the four dyads. Of these, the mothers produced 1394 utterances and the children, 1640.

Child Measures

1. Disfluency Measures. The two nonstuttering children exhibited primarily "word repetitions" with the next most frequently occurring category of disfluency being "part-word repetitions". The stuttering children produced mostly "part-word repetitions" and "word repetitions" in that order of frequency. See **FIGURE 6**.

2. Conversational Turns. Two general findings can be observed. First, the total number of turns per child varied across the group of four children with the youngest nonstuttering child (NS1) exhibiting the fewest turns and the youngest stuttering child (S1) exhibiting the greatest number of turns. Second, in all cases, the number of mother turns was similar, if not the same, as her child's. This finding would suggest that there was a regular interaction pattern in each mother-child dyad. See **FIGURE 7**.

3. Utterances. The youngest nonstuttering child (NS1) produced the fewest number of coded utterances while the oldest nonstuttering child (NS2) produced the greatest number of utterances.

4. Speech Act Measures. The most frequently occurring speech acts for all four subjects included **Descriptions, Statements,** and **Requests**. The overall percentage of use of the different speech act (intention) types did not seem to differentiate between the two groups of children - nonstutterers and beginning stutterers. Rather, the age of the subjects seemed to be of greater importance in identifying the differences among the children.

5. Speech Act Categories and Disfluencies. The two nonstuttering subjects were most disfluent on **Statements**. A different pattern of disfluency emerged for the two stuttering children. For these two children, **Descriptions** incurred the greatest percentage of disfluencies.

6. Mean Length of Utterance. This procedure was completed to examine the influence length of utterance might have on the occurrence of disfluency. See **FIGURE 13**. An assessment of the relation between MLU and disfluency revealed two patterns. First, the presence of disfluency in the speech of the nonstutterers did not appear to be influenced by utterance length. Nonstuttering Subject 1, for instance, exhibited the fewest disfluencies on **Descriptions**; the longest utterances on the average that he produced were **Descriptions**. A similar pattern was seen for Nonstuttering Subject 2. He produced the fewest disfluencies on **Requests**; **Requests** were his longest utterances on the average.

The stuttering subjects demonstrated a different pattern. Here, length of utterance did seem to be influential. Stuttering Subject 1 exhibited the greatest number of disfluencies on **Descriptions**; **Descriptions** were on the average the longest utterances she produced. The second stuttering subject demonstrated a similar pattern. **Descriptions** contained the greatest percentage of the total number of disfluencies and were also the longest utterances produced. Length of utterance seemed more influential with Stuttering Subject 1 than it did with the second stuttering subject. This youngster, the oldest of all four child subjects, exhibited a more confirmed stuttering problem as his disfluencies were more equally distributed across all speech acts.

7. Disfluencies per Speech Act. The relation between types of disfluencies and speech acts expressed was examined. All four children produced primarily "word repetitions" on **Statements** and **Descriptions** and primarily "part-word repetitions" on **Requests**.

Mother Measures

1. Intentions. All four mothers produced similar patterns in their use of speech acts. The three most frequently expressed speech acts included **Descriptions, Statements**, and **Requests**. See **FIGURE 15.**

2. Utterances. Three findings can be seen in the data displayed in **FIGURE 14**. First, the number of mother utterances for each mother varied across the group. Second, the mother of the youngest, nonstuttering child produced the fewest utterances; the mother of the youngest stuttering child, the most. Third, the mothers of the two stuttering children produced more utterances than the mothers of the two nonstuttering children.

3. Comparison of Child and Mother Utterances. A comparison of child and mothers utterances can be viewed in **FIGURE 14**. Observation of the data indicates that the mothers of the stuttering subjects produced more utterances overall than did their children while the mothers of the nonstuttering children produced fewer utterances than did their children. The ratio of child utterances to mother utterances for both nonstuttering children was 1.4 to 1. The ratio of child utterances to mother utterances for the stuttering children was .91 and .96 to 1.

DISCUSSION

The present study addressed two basic issues. First, it tested the bases of the claim proposed by Johnson. One question asked was whether mothers of stuttering children interact differently with their children than do mothers of nonstuttering children. The present study allowed a valid comparison between two groups of mothers and their children to be made. Both groups of child subjects displayed disfluencies. Both groups were referred to the investigator because their mothers had already diagnosed them as stutterers. Only two of the four children, however, had a defined stuttering problem. Thus, all mothers were faced with the same situation - a disfluent child who might have a long-term problem - but only two of the mothers were interacting with a diagnosed stutterer. Any observable differences between the mothers' interaction patterns would be less likely attributed to differences in experience or perception and more likely attributed to some inherent characteristics in their personal interaction style. So, if there is something consistently different about the interactions of the two mothers of the stuttering children compared to those of the mothers of the normally disfluent children then there would appear to be evidence for a maternal interaction style related to stuttering. (Remember, at the time of the initial taping, none of the mothers knew whether or not their child was a beginning stutterer.) Preliminary analyses of the data would suggest that indeed this is the case. Findings, though not supportive of qualitative differences in the verbal behaviors of mothers of stutterers, do support the idea that there is a maternal interaction style for stuttering. Conrad (1985) found similar results during one of her prescribed activities. In her study and the present study, mothers of stuttering children talked more often than did their children. This increased talking by mothers of stuttering children may be a result of two factors. The first is the need of the mothers to control the situation while the second might be the children's lack of spontaneous speech. While in this latter case, mothers might talk more because their children talk less, the former suggests that the lack of talking on the children's part may be attributed to the directive or more responsive style of the mothers. Caution must be exercised in assigning cause to one or another reason because it is likely that the effects noted are bi-directional.

Second, this study addressed whether disfluency in young children is systematically related to the type of speech act expressed. This question arose out of an interest in (a) how the content of a child's utterance might contribute to the occurrence of disfluency and (b) whether differences in the frequency of disfluency across speech act categories would serve to differentiate stuttering children from normally disfluent children. Such information could prove diagnostically and therapeutically pertinent. Findings from this study suggest that while the four children exhibited similarities in their use of speech acts, the location of disfluencies across these speech acts

differentiated the groups. Again, results revealed that these four children most frequently produced **Descriptions, Statements,** and **Requests**. And while the nonstuttering children produced most of their disfluencies on **Statements**, the young stuttering children produced most of their disfluencies on **Descriptions**. The incipient stutterers produced a majority of their disfluencies when expressing in detail various aspects of the environment. These children performed similarly to the young subject in the study by Pollack et al. (1986).

The finding that the stuttering children produced more disfluencies on **Descriptions** may account for the observed difference in maternal dominance by itself. The stuttering children in this study produced long descriptions. The length of these **Descriptions** appeared to influence the presence of disfluency. Meyers & Freeman (1985) found that all mothers interrupt children's disfluent speech significantly more often than they interrupt children's fluent speech. Given that to be the case, it seems likely that mothers would not only be more likely to interrupt but also attempt to exercise control over the conversation by taking longer turns as well. Meyers & Freeman examined interruptions in their study . Interruptions are one aspect of turn-taking behavior. Turn-taking appears to be orderly in average conversations (Jaffe & Feldstein, 1970). The system of signals and rules that underlie orderly turn-taking is, however, apparently complex. It is possible that when a speaker exhibits disfluency, this disfluency is perceived as a turn-yielding signal. Another possibility might be that disfluency is interpreted as a signal that the speaker is experiencing difficulty finding a word or expressing a thought. In this case, the mother may be interrupting or taking longer turns believing that she is providing assistance to her child.

In this preliminary descriptive study, some new insights have been provided about the factors that may contribute to the development and maintenance of stuttering. There are, however, a number of limitations to this study (e.g., the small sample size). These four children plus two others were followed once monthly over the period of a year. Further analyses will be pursued with this additional data. Until that time, it is hoped that other researchers might investigate similar issues. If the observations made in this study can be substantiated, the future of fluency therapy for young, incipient stutterers will involve much more specific evaluation of difficult speech contexts and increased understanding of the importance of parental verbal behavior in the persistence of early stuttering.

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TABLE 1. The performance of subjects on tests of speech, language, and hearing.

SUBJECT	AGE	PPVT	ARTIC	HEARING	DSS	O-P	DIS
NS 1	2;9	107	pass	pass*	50th%ile	pass	5%
NS 2	4;1	100	pass	pass	40th%ile	pass	3%
S 1	3;8	108	pass	pass*	90th%ile	pass	15%
S 2	4;11	92	pass	pass	40th%ile	pass	19%

All subjects are from middle class homes.
NS = Nonstutterer; S = Stutterer.
AGE = age in years; months.
PPVT = standard score from the PEABODY PICTURE VOCABULARY TEST.
ARTIC = results from the articulation screening section of the PRESCHOOL LANGUAGE SCALE.
HEARING = results from the hearing screening.
DSS = percentile score from the DEVELOPMENTAL SENTENCE SCORING.
0-P = results from the oral-peripheral examination.
DIS = percentage of disfluency in spontaneous speech.
* All children passed the hearing screening at 20dB except those marked. Due to noise in the home, these children had the 500 Hz frequency presented at 30dB which they then passed.

TABLE 2. A list of examples of utterances from the transcripts of the subjects explaining how utterances were analyzed.

The decision as to what was an utterance was made based on a combination of the definitions of pragmatic structure and syntactic propositional structure of utterances.

EXAMPLES:

A. *You hold this and tell me what you want* - 2 utterances.
   1. *You hold this* - REQUEST FOR ACTION.
   2. *and tell me what you want* - REQUEST FOR INFORMATION.

B. *Those are pretty big shoes, aren't they?* - 2 utterances.
   1. *Those are pretty big shoes* - DESCRIPTION.
   2. *aren't they?* - REQUEST FOR INFORMATION.

C. *Yes, it looks like that* - 2 utterances.
   1. *Yes* - STATEMENT.
   2. *it looks like that* - DESCRIPTION.

D. *Wow, that's really great!* - 2 utterances.
   1. *Wow* - CONVERSATIONAL DEVICE.
   2. *that's really great* - STATEMENT.

E. *Hello, Daddy?* - 2 utterances.
   1. *Hello* - CONVERSATIONAL DEVICE.
   2. *Daddy?* - REQUEST FOR INFORMATION.

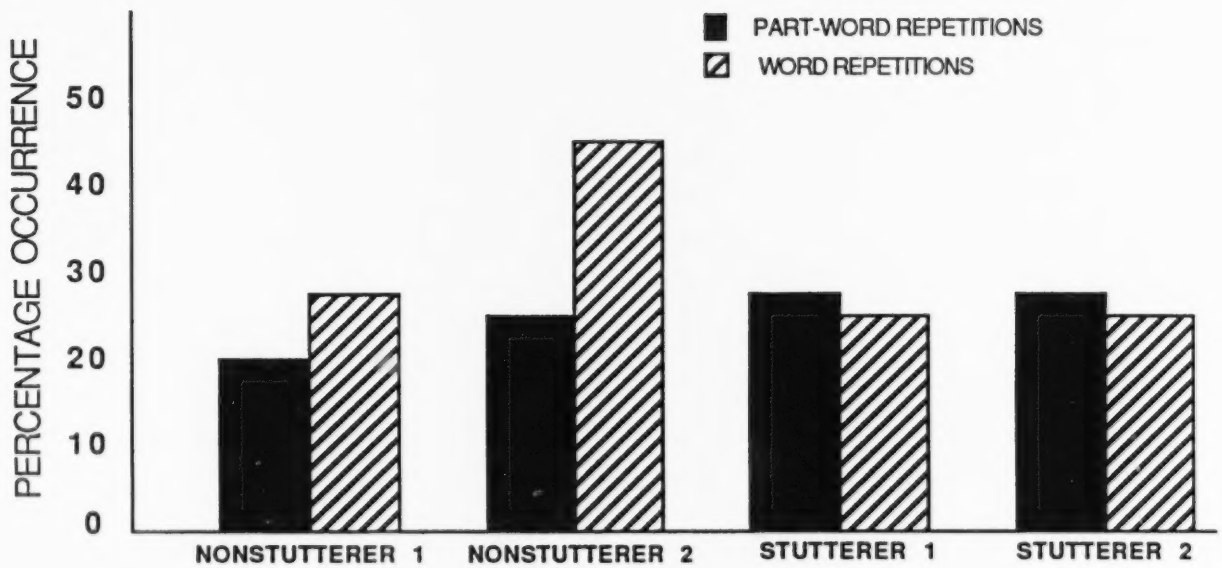

FIGURE 6. The most frequently occurring disfluencies as percentages of total disfluency.

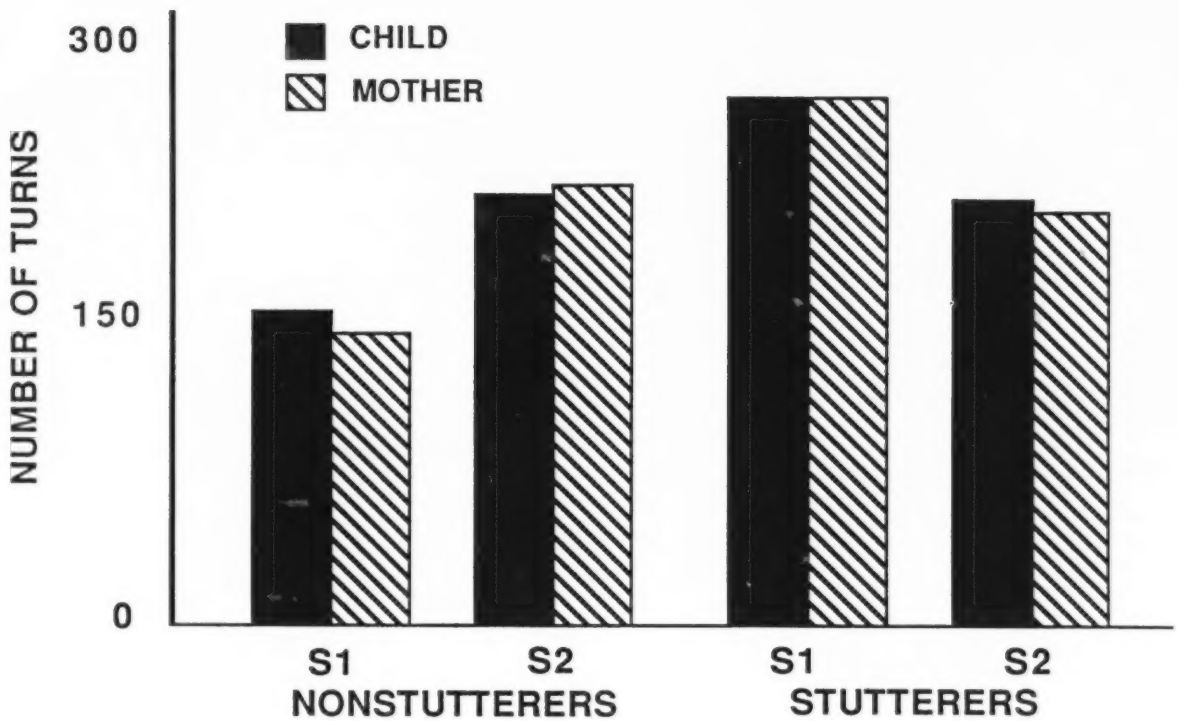

FIGURE 7. A comparison of the number of turns per child and mother during a 45-minute session.

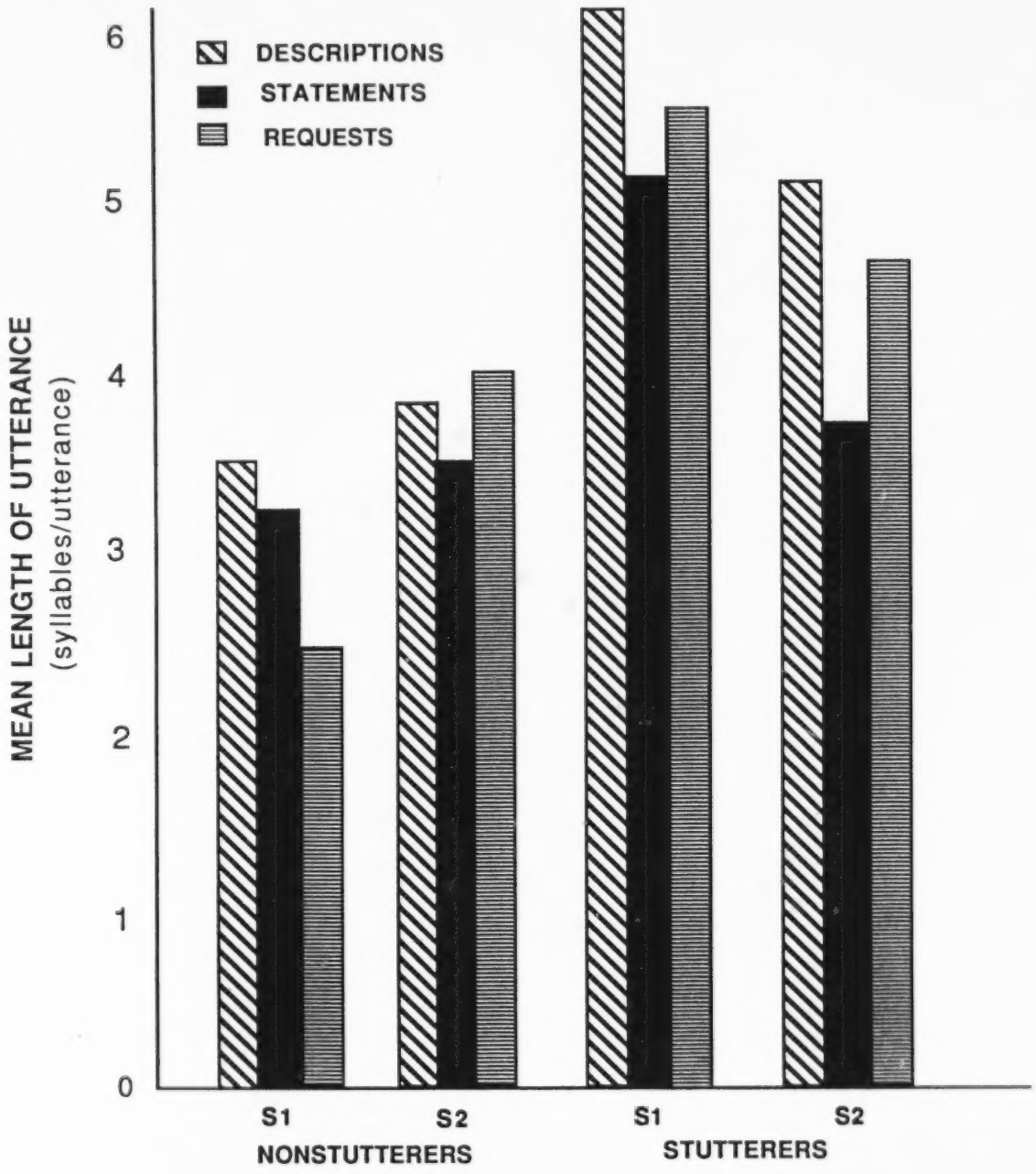

FIGURE 13. The mean length of utterance for the three most frequently occurring speech acts expressed by the four subjects.

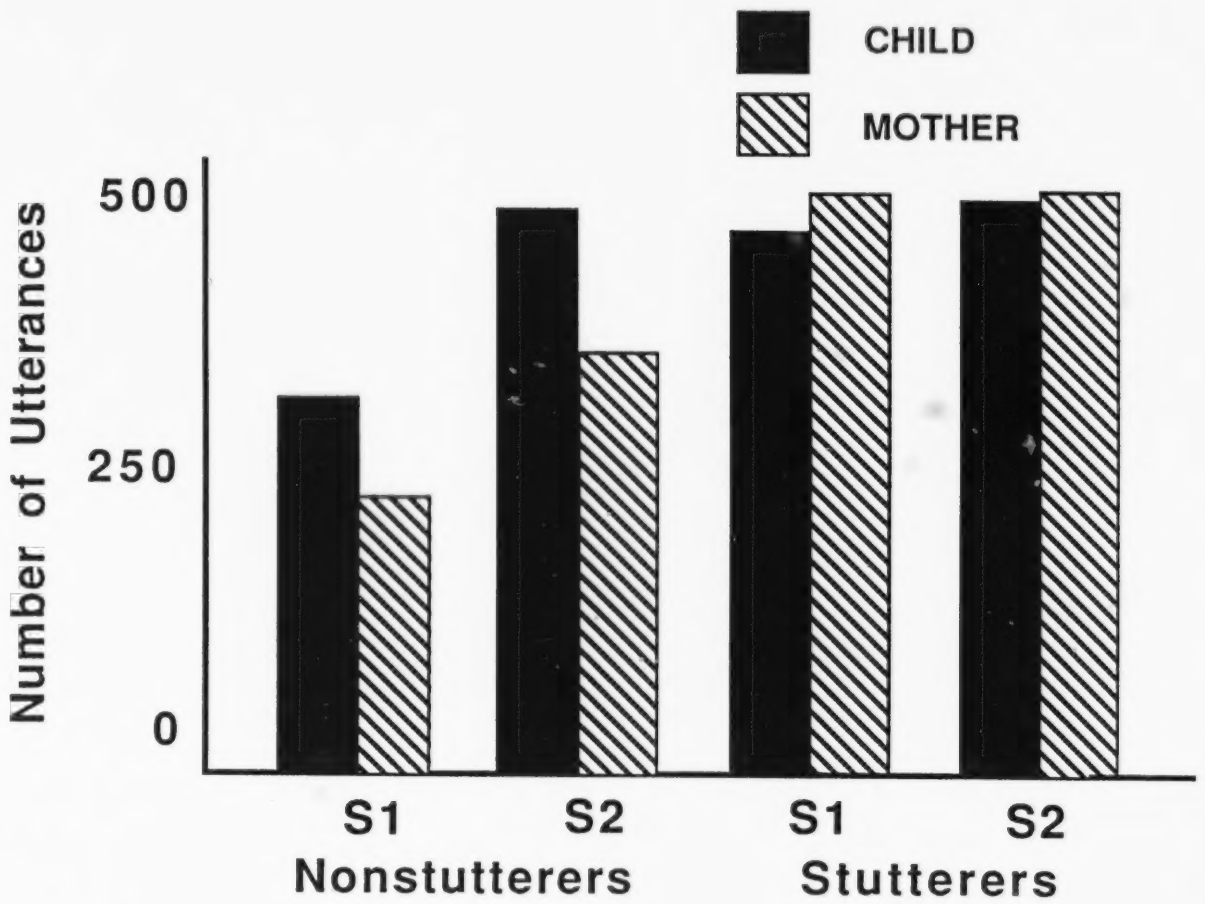

FIGURE 14. A comparison of the number of child and mother utterances per session.

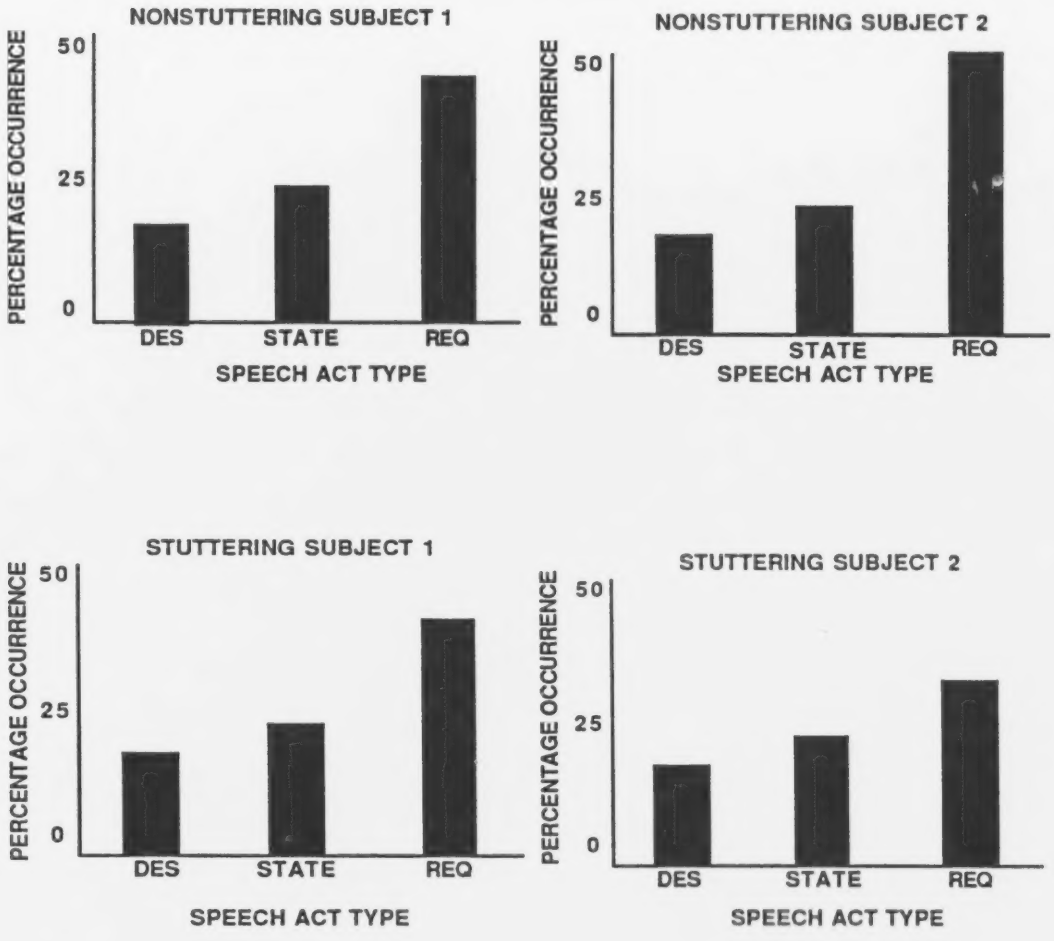

FIGURE 15. The three most frequently occurring speech acts used by the four mothers.

APPENDIX C

SPEECH ACT CATEGORIES

The following are descriptions of the ten speech act categories used. Examples are provided. These are based on categories proposed by Folger and Chapman (1978).

(1) **DESCRIPTION:** Represent observable or verifiable aspects of the environment. Included in this category are:

IDENTIFICATIONS: *That's a barn; John's a boy; There's a big choo-choo.*
EVENTS: *I'm drawing a house.*
PROPERTIES: *That's a bear with a wheel.*
LOCATION: *I put the dollar in the purse; Here's the neclace.*

(2) **STATEMENT:** Express facts, beliefs, attitudes, or emotions. Included here are:

EVALUATIONS: *That's right; Good.*
INTERNAL REPORTS: *I'm tired.*
ATTRIBUTIONS (about other's internal states): *He wants to go.*
RULES: *You can't ride the rocket; No.*
RESPONSES: *Yes.*

(3) **REQUEST FOR INFORMATION:** Utterance seeks an informational response from the child.

What's that? Where is the bear going? Is he playing with it?

(4) **REQUEST FOR PERMISSION:** Speaker seeks the right to do or accept something.

Can I tie your shoe?

(5) **REQUEST FOR ACTION:** Utterance seeks a behavioral response from the addressee. Such requests can occur in any of four forms:

QUESTION FORM: *Why don't you feed him an apple?*
COMMAND FORM: *Get a blue block; Sit in your high chair; Look here; Come on.*
EMBEDDED COMMAND FORM (use of 1st person plural): *Let's look at this: Let's do your puzzle.*
STATEMENT FORM (indirect request): *It sure would be nice if you used your spoon.*

(6) **CONVERSATIONAL DEVICES:** Utterance functions primarily to establish or maintain interpersonal contact. Included are:

BOUNDARY MARKERS: *Hello; Hi; Thank you: Good night.*
CALLS: *John* (when not commanding action).
ACCOMPANIMENTS TO ACTION: *There; There you go; OK* (if not indicating "I will"); *Oh; Oh wow.*

(7) **PERFORMATIVE PLAY:** Any riddle, nursery rhyme, or reading from a book.

(8) **ELICITED IMITATION:** Utterance explicitly asks for an imitation from the addressee.

Say "night-night"; Can you say "shoe"?

(9) **REPETITION:** Utterance is an exact repetition of a remark including prosodic characteristics.

(10) **OTHER:** Any utterance which are not words but sounds. Although many are communicative, their function is frequently difficult to discern and thus were placed in this remaining category.

Mmm; Ahemm: Ah-oh.